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Oct 4, 1985

DERWENT-ACC-NO: 1985-286440

DERWENT-WEEK: 198546

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TITLE: Porous, carbonaceous electrode substance contg. elongated holes - by hardening and calcining carbon@:fibre, binder, micropore regulator with polymer, useful as fuel cell

PRIORITY-DATA: 1984JP-0052026 (March 16, 1984)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 60195876 A	October 4, 1985	N/A	012	N/A
CA 1237766 A	June 7, 1988	N/A	000	N/A
<u>US 4687607 A</u>	August 18, 1987	N/A	000	N/A

INT-CL (IPC): C01B 31/02; C04B 38/06; C08J 9/26; D01F 9/12; H01M 4/96

ABSTRACTED-PUB-NO: JP60195876A

## BASIC-ABSTRACT:

A porous carbonaceous electrode substrate, provided with a gp. of elongated holes for reactant gases, for fuel cells is prepd. by the steps: (a) introducing into a metal mould of predetermined shape and dimension, in order, (1) a first material for producing the electrode substrate, (2) a high polymeric substance in the shape of a cloth-like fabric or a grating like moulding for forming the elongated holes, and (3) a second amt. of material (1); (b) press-moulding the materials in the mould heated at 70-170 deg.C at a pressure of 5-100 kg/cm<sup>2</sup> for 1-160 mins; (c) subjecting the material to after hardening; and (d) calcining the material in an inert atmos. at 800-3,000 deg.C to thermal-decompose a larger pt. of material (2) and carbonise it, resulting in a porous carbonaceous electrode substrate provided with holes, as (7), which are open from one side to the oppsite side through nearly the central region of the thickness of the susbtrate.

Material (1) comprises: 10-50 wt.% of a filling material (i) which is short carbon fibres or granular activated carbon, 20-40 wt.% of a binding material (ii) selected from phenol activated carbon, 20-40 wt.% of a binding material (ii) selected from phenol resin, epoxy resin, furfuryl alcohol resin, pitch derived from petroleum or coal, and mixts., providing a carbonisation yield of 30-75 wt.%, and 20-50 wt. of a micropore regulating material (iii) selected from polyvinyl alcohol, polyvinyl chloride, polystyrene, polyethylene, polypropylene, sucrose and mixts. Material (2) is selected from polyethylene, polypropylene, polystyrene, polyvinyl chloride and polyvinyl alcohol to give a carbonisation yield of less than 30.wt.%.

USE/ADVANTAGE - substrate is thinner than conventional ones and the thinner gas diffusion layer, provides a smaller resistance to gas diffusion and a larger current density. (First major country equivalent to J60195876-A)

ABSTRACTED-PUB-NO:

US 4687607A

EQUIVALENT-ABSTRACTS:

*perhaps  
a mixture  
at best*

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ABSTRACTED-PUB-NO: JP60195876A

EQUIVALENT-ABSTRACTS: US 4687607A A porous carbonaceous electrode substrate, provided with a gp. of elongated holes for reactant gases, for fuel cells is prepd. by the steps: (a) introducing into a metal mould of predetermined shape and dimension, in order, (1) a first material for producing the electrode substrate, (2) a high polymeric substance in the shape of a cloth-like fabric or a grating like moulding for forming the elongated holes, and (3) a second amt. of material (1); (b) press-moulding the materials in the mould heated at 70-170 deg.C at a pressure of 5-100 kg/cm<sup>2</sup> for 1-160 mins; (c) subjecting the material to after hardening; and (d) calcining the material in an inert atmos. at 800-3,000 deg.C to thermal-decompose a larger pt. of material (2) and carbonise it, resulting in a porous carbonaceous electrode substrate provided with holes, as (7), which are open from one side to the opposite side through nearly the central region of the thickness of the substrate. Material (1) comprises: 10-50 wt.% of a filling material (i) which is short carbon fibres or granular activated carbon, 20-40 wt.% of a binding material (ii) selected from phenol activated carbon, 20-40 wt.% of a binding material (ii) selected from phenol resin, epoxy resin, furfuryl alcohol resin, pitch derived from petroleum or coal, and mixts., providing a carbonisation yield of 30-75 wt.%, and 20-50 wt. of a micropore regulating material (iii) selected from polyvinyl alcohol, polyvinyl chloride, polystyrene, polyethylene, polypropylene, sucrose and mixts. Material (2) is selected from polyethylene, polypropylene, polystyrene, polyvinyl chloride and polyvinyl alcohol to give a carbonisation yield of less than 30.wt.%. USE/ADVANTAGE - substrate is thinner than conventional ones and the thinner gas diffusion layer, provides a smaller resistance to gas diffusion and a larger current density. (First major country equivalent to J60195876-A)

CHOSEN-DRAWING: Dwg.3/4 Dwg.3/4